

**Response to Office Action Mailed October 9, 2002**

**A. Claims In The Case**

Claims 10-97 have been rejected. Claims 10-97 are pending. Claims 10-13, 26-29, 42, 49-50, 58, 65-66, 70-71, 73, 80-81, 85-87, 94 and 95 have been amended.

**B. The Claims Are Not Indefinite Pursuant To 35 U.S.C. § 112, Second Paragraph**

Claims 10-57 were rejected under 35 U.S.C. § 112, first paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully disagrees.

The Examiner states, "The phrase 'treated smectite clay' as used in claims 26-41, does not particularly point out how applicant intends for the clay to be treated. (Office Action, page 2). Applicant respectfully disagrees with the rejection, however, to expedite prosecution of the application, Applicant has amended claims 26-29 for clarification. Support for the amendments is found in Applicant's specification, which states, "The clay edges are treated with an anionic polymer, such as polyacrylate. A moderately high charge polymer is used, which becomes strongly attached to the clay edges, making them strongly anionic." (Specification, page 4, lines 14-16).

Claims 10-57 were rejected as being indefinite. The Examiner states "the limitation 'the platelet' with in (sic) the process steps of the claims. There is insufficient antecedent basis for this limitation." Applicant respectfully disagrees with the rejection, however, to expedite prosecution of the application, Applicant has amended claims 10 and 26 for clarification.

The Examiner states "all claims refer to a negatively charged organic compound. Applicant does not particularly point out and distinctly claim the organic compound which he intends for the invention. Applicant respectfully disagrees with the rejection, however, to

expedite prosecution of the application, Applicant has amended claims 10-13, 26-29, 42, 49-50, 58, 65-66, 70-71, 73, 80-81, 85-87, 94 and 95 for clarification.

Applicant submits claims 10-57 are definite pursuant to 35 U.S.C. § 112, Second Paragraph.

**E. Summary**

Based on the above, Applicant respectfully requests favorable reconsideration.

If any extension of time is required, Applicant hereby requests the appropriate extension of time. If any fees are required or if any fees are inadvertently omitted or have been overpaid, please appropriately charge or credit those fees to Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account Number 50-1505/5628-02102/EBM

Respectfully submitted,



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Date: 1/9/03

**“Strike-through Version of Claims”**

10. (amended) A method of preparing a nanocomposite comprising:

mixing a smectite clay with ~~negatively charged organic molecules~~ an anionic polymer to form an anionic polymer treated smectite clay; and

adding the anionic polymer treated smectite clay to a polymer matrix such that the ~~platelets~~ anionic polymer treated smectite clay is ~~are~~ exfoliated within the polymer matrix.

11. (amended) The method of claim 10, wherein the ~~negatively charged organic molecule~~ anionic polymer ~~comprises is~~ a high charge density anionic polymer.

12. (amended) The method of claim 10, wherein the ~~negatively charged organic molecule~~ anionic polymer ~~comprises is~~ a polyacrylate.

13. (amended) The method of claim 10, wherein the ~~negatively charged organic molecule~~ anionic polymer is added to the smectite clay at about 0.1 to about 1.0% by weight of the dry smectite clay.

26. (amended) A nanocomposite prepared by the process comprising:

mixing a smectite clay with ~~negatively charged organic molecules~~ an anionic polymer to form an anionic polymer treated smectite clay; and

adding the anionic polymer treated clay to a polymer matrix such that the ~~platelets~~ anionic polymer treated clay is ~~are~~ exfoliated within the polymer matrix.

27. (amended) The nanocomposite of claim 26, wherein the ~~negatively charged organic molecule~~ anionic polymer ~~comprises is~~ a high charge density anionic polymer.

28. (amended) The nanocomposite of claim 26, wherein the ~~negatively charged organic molecule~~anionic polymer ~~comprises is~~ a polyacrylate.

29. (amended) The nanocomposite of claim 26, wherein the ~~negatively charged organic molecule~~anionic polymer is added to the smectite clay at about 0.1 to about 1.0% by weight of the dry smectite clay.

42. (amended) A composition comprising, an organoclay exfoliated in a polymer matrix, wherein the organoclay comprises a smectite clay, a ~~negatively charged organic compound~~ an anionic polymer and a quaternary ammonium compound.

49. (amended) The composition of claim 42, wherein the ~~negatively charged organic compound~~ anionic polymer ~~comprises is~~ a high charge density anionic polymer.

50. (amended) The composition of claim 42, wherein the ~~negatively charged organic molecule~~ anionic polymer ~~comprises is~~ a polyacrylate.

58. (amended) A method of making a clay composition comprising:

contacting a smectite clay with at least one ~~negatively charged organic compound~~ anionic polymer; and,

contacting a smectite clay with a quaternary ammonium compound.

65. (amended) The method of claim 58, wherein the ~~negatively charged organic compound~~ anionic polymer ~~comprises is~~ a high charge density anionic polymer.

66. (amended) The method of claim 58, wherein the ~~negatively charged organic~~ anionic polymer ~~molecule comprises is~~ a polyacrylate.

70. (amended) The method of claim 58, comprising adding the smectite clay to water to make an aqueous slurry of the smectite clay prior to contacting the smectite clay with the ~~negatively charged organic compound~~ anionic polymer, wherein the quaternary ammonium compound complexes with both the clay edges and the clay basal surfaces.

71. (amended) The method of claim 58, further comprising adding the smectite clay to water to make an aqueous slurry of the smectite clay; contacting the aqueous slurry of the smectite clay with the ~~negatively charged organic compound~~ anionic polymer and subjecting the aqueous slurry of the smectite clay to a high shear treatment prior to contact with the quaternary ammonium compound.

73. (amended) A clay composition prepared by the process comprising:

contacting a smectite clay with at least one ~~negatively charged organic compound~~ anionic polymer; and,

contacting a smectite clay with a quaternary ammonium compound.

80. (amended) The composition of claim 73, wherein the ~~negatively charged organic compound~~ anionic polymer ~~comprises is~~ a high charge density anionic polymer.

81. (amended) The composition of claim 73, wherein the ~~negatively charged organic molecule~~ anionic polymer ~~comprises is~~ a polyacrylate.

85. (amended) The composition of claim 73, further comprising adding the smectite clay to water to make an aqueous slurry of the smectite clay prior to contacting the smectite clay with the ~~negatively charged organic compound~~ anionic polymer.

86. (amended) The composition of claim 73, further comprising adding the smectite clay to water to make an aqueous slurry of the smectite clay; contacting the smectite clay with the ~~negatively~~

~~charged organic compound~~ anionic polymer and subjecting the aqueous slurry of the smectite clay to a high shear treatment prior to contact with the quaternary ammonium compound.

87. (amended) A composition comprising:

a smectite clay;

an anionic polymer ~~negatively charged organic compound~~; and,

a quaternary ammonium compound.

94. (amended) The composition of claim 87, wherein the ~~negatively charged organic compound~~ anionic polymer ~~comprises is~~ a high charge density anionic polymer.

95. (amended) The composition of claim 87, wherein the ~~negatively charged organic compound~~ anionic polymer ~~comprises is~~ a polyacrylate.